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EXAMINER	
NGUYEN, NGON BINH	
ART UNIT	PAPER NUMBER
2625	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/576,609	FUJII ET AL.	
	Examiner	Art Unit	
	NGON NGUYEN	2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 November 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-8* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Applicant's amendment filed on 11/12/2009 has been entered:

Claims 1-2, and 8 have been amended.

No Claim(s) have been canceled.

No claims have been added. Claims 1-8 are still pending in this application, with claim 1 being independent.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-7 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Kandori et al. (US Patent Application No. US 2004/0240017) in view of Asami et al. (US Patent No. 5,415,978) and as evidenced by Hirose et al. (US Patent Application No. US 2004/0105139).

With reference to claim 1, Kandori et al. discloses a method for using a beam of light, FIG 16/203, which is emitted from and modulated by the light source, FIG 16/201, is deflected by an optical deflector means, FIG 16/202, to produce deflected beams of light, FIG 16/204-205, that scan an image on a photosensitive drum or body, FIG 16/220, of an electro-photography type image forming apparatus. The optical deflector means comprises an optical deflector, FIG 1, as evidenced by Hirose et al.; FIG 11,

which uses oscillation device, a first elastic supporting portion for oscillatively supporting the first movable plate and a supporting substrate for fixing the first supporting portion device. The image forming method comprising:

controlling the temperature of the optical deflector by using a modulation signal from the modulation means so as to stabilize a resonance frequency of the optical deflector (the resonance period of a resonance type optical deflector, which is driven by electromagnetic force, normally drifts with temperature, arises the problem that is not possible to control the angle of deflection and keep it to a constant value with temperature changes and time lapse, [0006]. A deflection means for deflecting the modulated light a from the light source as to make possible to very accurate control its operation such a way that is not affected by changes of environmental temperatures, i.e. stabilizing its resonance period/frequency, [0012]. A block diagram of an optical deflector, FIG 5, illustrates the control means thereof. The light source, FIG 5/201, is driven to turn on and off repeatedly (for modulation) by a modulation signal, FIG 5/305, from the modulation signal generation means, FIG 5/301, that operates the turn on and off the light source wit predetermined period. The modulated beam of light, FIG 5/203, is deflected by the deflections means, FIG 5/202; [0072]-[0074]).

Kandori et al. does not disclose:

the temperature controller

However, Asami et al. discloses (an image forming method using an optical deflector, Asami; FIG 2/68, and a light source, Asami; FIG 2/54, which emits laser beam to be modulated by an external modulator in accordance with image to be formed, user

a semiconductor laser source, Asami; FIG 2/54, equipped with a temperature control means, column 4 lines 40-45, for producing the laser beams, Asami; FIG 2/54R, G, B. The laser beams are modulated by an acousto-optic modulator (AOM) or a modulation means, Asami; column 16 lines 29-43, and a resonator constructed for a light source is mounted on a heat sink, Asami; FIG 3/116, secured to a Peltier (a P-N junction heat absorption) element for maintaining the resonator at a predetermined temperature as to stabilize the resonance frequency of the optical deflector without temperature drift, Asami; column 17 lines 16-41).

Controlling the temperature of a source such as a laser source is desirable for stabilizing the wavelength or frequencies of an output laser beam. Therefore, one having ordinary skill in the art at the time of invention was made would have been motivated to incorporate Asami teaching into Kandori into device and method to provide user the option of using the temperature control means for performing the modulation of the light beams as to control the operation of a resonance type optical deflector.

With reference to claim 2 (depends on claim 1), Asami et al. further discloses a method wherein:

the temperature controller is the light source which emits light other than drawing light for forming the image to the optical deflector so as to stabilize the resonance frequency of the optical deflector (the temperature control is the light source including an inexpensive semiconductor laser for emitting a steady laser beam free of a

wavelength (proportional to the invert of frequency) variation (as required for stabilizing the resonance frequency of the optical deflector), Asami; column 1 lines 17-19).

With reference to claim 3 (depends on claim 2), Kandori et al. in view of Asami et al. further discloses a method wherein:

a total amount of the light emitted from the light source to the optical deflector within an arbitrary unit time is controlled such that the total amount becomes close to a predetermined amount (a control signal generation means, FIG 5/303, modifies the control signal, FIG 5/308, for the deflection means, FIG 5/202, of modulation control signal, FIG 5/310, of the light source, FIG 5/201. The control signal, FIG 5/308, of the deflection means is adapted to change the rate of which the movable plate of the resonance type optical deflector swings in order to change the timing of the deflection of the mirror (movable plate) that belongs to the deflection means, [0076]-[0077]. The drive means, FIG 5/304, selects the timing or the period of the driving signal according to the control signal, FIG 5/308, and applies to the drive signal, FIG 5/309, to the deflection means or the deflector, [0077]. The modulation control, FIG 5/310, for the light source, FIG 5/291, is adapted to adjust the timing or period of the modulation signal, FIG 5/305, so that the modulation of the light may be in harmony with the deflection timing, [0079]. It may be also arranged to change either the control signal, FIG 5/308, for the deflection means or the modulation control signal, FIG 5/310, for the light source or both of them, [0080]). Graph, FIG 10A, illustrates the drive signal, FIG 5/309, of the deflection means for forming an image on a photosensitive medium, FIG 3/101. The vertical axis

represents the amplitude of the drive signal and the horizon axis represents the time of the turning on (drawing) and off (non-drawing) of the resonance type optical deflector, i.e. the drive signal of the deflection means controls the total amount of light emitted from light source to be deflected within a unit of time as required for forming the image.

With reference to claim 4 (depends on claim 3), Kandori et al. in view of Asami et al. further discloses a method wherein:

the unit time comprises a drawing time for forming the image and a non-drawing time for forming no image, and wherein an amount of light emitted from the light source to the optical deflector within the non-drawing time is controlled based on an amount of light emitted to the optical deflector within the drawing time to control a total amount of the light emitted from the light source to the optical deflector within the unit time so as to becomes close to a predetermined amount (graph, FIG 10A, illustrates the drive signal, FIG 5/309, of the deflection means for forming an image on a photosensitive medium, FIG 3/101. The vertical axis represents the amplitude of the drive signal and the horizon axis represents the time of the turning on (drawing) and off (non-drawing) of the resonance type optical deflector, i.e. the drive signal of the deflection means controls the total amount of light emitted from light source to be deflected within a unit of time as required for forming the image. A control signal generation means, FIG 5/303, modifies the control signal, FIG 5/308, for the deflection means, FIG 5/202, of modulation control signal, FIG 5/310, of the light source, FIG 5/201, in such as a way that the relative positional displacement of the scanning positions of the modulated and deflected beams

of the light become equal to a predetermined value on the basis of the scanning position displacement signal, FIG 5/307. The control signal, FIG 5/308, of the deflection means is adapted to change the rate of which the movable plate of the resonance type optical deflector swings in order to change the timing of the deflection of the mirror (movable plate) that belongs to the deflection means, [0076]-[0077]. The drive means, FIG 5/304, selects the timing or the period of the driving signal according to the control signal, FIG 5/308, and applies to the drive signal, FIG 5/309, to the deflection means or the deflector, [0077]. The modulation control, FIG 5/310, for the light source, FIG 5/291, is adapted to adjust the timing or period of the modulation signal, FIG 5/305, so that the modulation of the light may be in harmony with the deflection timing, [0079]. It may be also arranged to change either the control signal, FIG 5/308, for the deflection means or the modulation control signal, FIG 5/310, for the light source or both of them, [0080]).

With reference to claim 5 (depends on claim 3), Kandori et al. in view of Asami et al. further discloses a method wherein:

the unit time is an integral multiple of a 1/4 oscillating period of the oscillator in the optical deflector (a sinusoidal drive signal waveform of a resonance type optical deflector, FIG 10A, has the drive frequency agrees with the resonance frequency of this deflector, [0141]. The horizontal axis, FIG 10A, represents the time of the oscillation period wherein the on time or drawing time is half of an oscillation period, or twice (multiple) of 1/4 oscillation period, which can be designated as a unit of time.

With reference to claim 6 (depends on claim 1), Asami et al. further discloses a method wherein:

the light source is a single light source (a single light source, Asami; FIG 2/54, emits light of narrow band wavelength for exposing the R (Red), G (Green), and B (Blue), Asami; FIG 2/54R,54B, 54G); column 15 lines 50-68 and column 16 lines 1-11).

With reference to claim 7 (depends on claim 1), Asami et al. further discloses a method wherein:

the light source is a light source having a plurality of different wavelengths, and wherein a filter for preventing light other than drawing light from the light source from reaching the object to be irradiated is provided (the light source, Asami; FIG 2/54, emits three laser beams (drawing lights), Asami; FIG 2/LR, LB, LG, for exposing (irradiating) the sensitive layer (object to be irradiated) of the photosensitive material. Each laser beam has a wavelength (among plurality of different wavelength) corresponding to the spectral sensitivity of one corresponding photosensitive layer (object to be irradiated) of blue (B) sensitive layer, a green (G) sensitive layer, and a red sensitive layer, Asami; TABLES 6-8; column 15 lines 50-68 and column 16 lines 1-55).

4. Claim 8 is rejected under 35 U.S.C. 103 (a) as being unpatentable over Kandori et al. (US Patent Application No. US 2004/0240017) in view of Asami et al. (US Patent No. 5,415,978) and further in view of milkami et al. (US Patent No. 4,738,502).

With reference to claim 8 (depends on claim 1), Kandori et al. in view of Asami et al. further discloses (the resonance period of a resonance type optical deflector, which is driven by electromagnetic force, normally drifts with temperature, arises the problem that is not possible to control the angle of deflection and keep it to a constant value with temperature changes and time lapse, [0006].

Kandori et al. in view of Asami et al. does not disclose a method wherein:

the temperature controller comprises a heating element mounted on a part of the optical deflector, and wherein the temperature of the optical deflector is controlled by the heating element so as to stabilize the resonance frequency of the optical deflector.

However, Mikami et al. discloses (an optical deflector, Mikami; FIG 4, is constructed using the Peltier effect (the thermal electric effect) element, Mikami; FIG 4/56, controlled by a switching circuit, Mikami; FIG 4/5 and column 3 lines 43-68, to keep the temperature of the deflector to a predetermined constant temperature, which therefore controls the oscillation/resonance frequency of the resonance type optical deflector to a constant value with temperature change).

Therefore, one having the skill in the art at the time of invention was made would have been motivated to modify the method disclosed by Kandori et al. in view of Asami et al. using Mikami teaching to provide a user the option of using a resonance type optical deflector constructed with a temperature controlled element to keep the resonance frequency of this deflector to a constant value with temperature change.

Response to Arguments

5. Applicant's arguments with respect to claims 1-8 have been considered but are moot in view of the new ground(s) of rejection as applied to claim rejections 1-8 above.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Ngon Nguyen whose telephone number is (571) 270-7533. The examiner can normally be reached on 7:00am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Supervisor Benny Tieu can be reached on (571) 272-7490. The fax phone

number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/NGON NGUYEN/

Examiner, Art Unit 2625

/Benny Q Tieu/

Supervisory Patent Examiner, Art Unit 2625